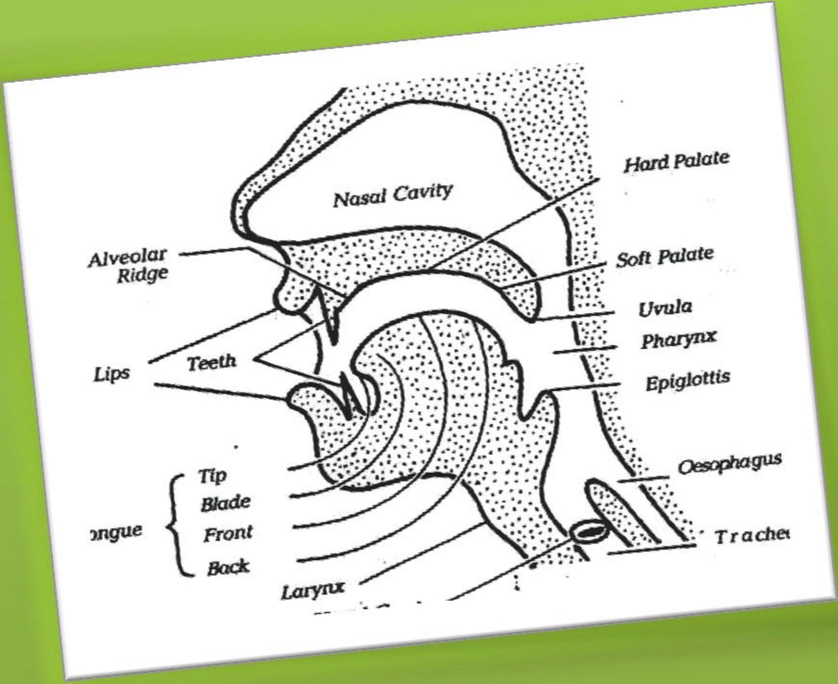
# ENG2203

## INTRO. TO PHONETICS & PHONOLOGY



# ENG2203 - INTRO. TO PHONOTICS & PHONOLOGY
## COURSE OUTLINE

1. Definition of Phonetics
    a. Etymological meaning
    b. Technical definition of phonetics
    c. Analytical
    d. Limitational
    e. Functional
    f. Descriptional
2. Branches of Phonetics
    a. Acoustic Phonetics
    b. Articulatory Phonetics
    c. Auditory Phonetics
    d. Relationship of the Branches (Acoustic-Articulatory-Auditory)
3. Organs of Speech
    a. Articulators
        i. Active Articulatory Organs
            1. Lower lip
            2. Lower teeth
            3. Tip of the tongue
            4. Front of the tongue
            5. Blade of the tongue
            6. Back of the tongue
        ii. Passive Articulatory Organs
            1. Upper lip
            2. Upper teeth
            3. Alveolar
            4. Hard palate
            5. Soft palate
    b. Organs
        i. Pharynx

        ii. Velum (Soft Palate)
        iii. Hard palate
        iv. Alveolar ridge
        v. The tongue
            1. Tip of the tongue
            2. Blade of the tongue
            3. Front of the tongue
            4. Back of the tongue
        vi. The teeth
            1. Upper teeth
            2. Lower teeth
        vii. Lips
            1. Upper lip
            2. Lower lip

4. Phonemes and Allophones
    a. The Phoneme
        i. Etymological meaning
        ii. Technical Definition
        iii. Description and examples
    b. The Allophone
        i. Etymological meaning
        ii. Technical Definition
        iii. Description of Allophones
        iv. Example of realization
            1. Alternative realization: *aspirated*
            2. *Unaspirated*
            3. *Nasalized*
            4. *Lateralized*
            5. *Labialized*
            6. *Unreleased*
5. Speech Sound/Production Process

- a. Respiratory and Phanatory Stages
- b. Articulatory Stages
- c. Sound Articulation: Specific Issues

6. Definition of Phonology
    - a. Technical definition of phonology
    - b. Limitational definition of phonology
    - c. Phonologist
    - d. Description definition of phonology
    - e. Relationship between Phonetics and Phonology
    - f. Interference between Phonetics and Phonology
    - g. Difference between Phonetics and Phonology
7. Basic Sound of English
    - a. Explanation
    - b. Classes
        - i. Segmental
            - 1. Consonants
            - 2. Vowels
        - ii. Supra-segmental
8. Sound Pattern of English Language
    - i. Consonant Sounds
        - 1. Place of Articulation
            - a. Bilabial
            - b. Labio-dental
            - c. Dental
            - d. Alveolar
            - e. Post-alveolar
            - f. Palate-alveolar
            - g. Palatal
            - h. Velar
            - i. Glottal
            - j. Uvula

        k. Pharynx
      2. Manners of Articulation
        a. Plosive/stop
        b. Affricative
        c. Fricative
        d. Nasal
        e. Lateral
        f. Glide/approximant
      3. State of Glottis
        a. Voiced
        b. Voiceless
    ii. Vowels Sounds
      1. Monothongs
        a. Short Vowels
        b. Long Vowels
      2. Dipthongs
        a. Definition of dipthongs
        b. Types of Dipthongs
          i. Centering Dipthongs
          ii. Closing Dipthongs
        c. Lip Rounding
      3. Vowels Chart
      4. Vowels Table
9. Transcription
    a. Definition
    b. Types
      i. Phonetic Transcription
      ii. Phonemic Transcription
    c. Transcribing

## 1. DEFINITION OF PHONETICS

Etymologically, the word *'phonetic'* was derived from Greek word '*phōnētikos*'; means spoken.

Technically, phonetic can be defined as [1] ***a study of production of sounds as produced by organ of speech***. [2]It is ***the study of speech sounds in general***; also, [3]the ***study of sounds production in language in general without restricting it to any particular language***. [4]It deals with ***the analysis of sound of language in terms of sounds that constitute speech unit which are distinct from all other possible human sounds***. [5]It also deals with the ***analysis of the sounds of language in terms of articulation, transmission and perception***. [6]In a phonetic study, *square bracket* [ ] are used to endorse phonetics symbols. For example, to indicate the consonant sounds of the following English words; *dog*, *cat*, *girl*, *tree*; square bracket are used by convention:

| | |
|---|---|
| [d] as in dog [*d*] | [k] as in cat [*k*] |
| [g] as in girl [*g*] | [t] as in tree [*t*] |

Phonemes, which are the distinguished sounds, constitute the basic unit of study in Phonetics.

## 2. PHONETICS AND ITS BRANCHES

Phonetics is the scientific study of human speech sound. Study method for classification, identification, description and transcription of human speech sounds; there are three (3) major branches of phonetics in study of phonetics, namely: acoustic phonetics, articulatory phonetics and auditory phonetics.

## a. ACOUSTIC PHONETICS:

Acoustics phonetics deals with the transmission of speech through the air (sound waves). Different instruments are used to measure the characteristics of these sound waves; the study of physical property of speech sounds, including the description nature of the sound waves resulting from speech (focuses of the speech sounds, such as speech pitch, loudness and quality) utilized by machines such as ***spectrograph*** and ***oscillomink*** to measure sound waves particularly the frequency and the amplitude of the sound wave and produce a picture of sound '***spectrogram***'. This branch of phonetics concentrate attention on studying the physical properties of the sound waves generated when the speech organs go into activity. It also seeks to explain how sound is transmitted through the air from the speaker to the hearer. Acoustic phonetics has emphasis the fact that is a continue flow speech sounds.

## b. ARTICULATORY PHONETICS:

Articulatory phonetics is the study of how sound are produced. Sound are classified according to the place of articulation in term of organs of speech used in their production (***alveolar, palatal, vela*** etc.) and according to manner of articulation in terms of how airflow from the lungs is obstructed in their production, e.g ***stop, fricative, affricative*** etc.

Articulatory phonetics refers to the approach to the medium that seek to explain and classify speech sound in terms of the variations in the production of the speech sounds; i.e. organs which produces them and how these organs behave during their production. For instance, a description of the sound **[p]** will include the fact that, the ***two lips*** come together and momentarily completely blocked the passage of air from lungs and then a sudden release of the air or sudden parting of the lips occurs resulting in some kind of explosion. It is for this reason that phonetics description of **[p]** includes the terms “***bilabial plosive voiceless”.***

## c. AUDITORY PHONETICS:

Hearing or audition is one of traditional five senses, and refers to the ability to detect sounds. In human being, hearing is performed traditionally by the ear which also performs the function of maintaining balance. A common rule of thumb used to describe human hearing; is that human hearing is sensitive in the range of sound wave or frequency of 20 decibel or Hertz to 20 kHz. Auditory phonetics studies how the human hearing organ perceives sound.

This branch of phonetics sees speech mainly as an activity of the hearer, how the hearer perceives and interprets speech sounds. This branch of phonetics is also sometime said to be perceptual. In addition to being concerned with the basic sound of natural languages; it deals with such properties of sound as pitch, accentuation and loudness - non-segmental issues which affect sound perception.

## d. RELATIONSHIP OF THE BRANCHES

The different branches of phonetics may be taken to represent separable approaches to the study of the subject. Any of the approaches may be adopted because of the investigator’s purpose or convenience. For instance, an architect who has to design a sound - proof studio, theatre or auditorium would find acoustics very useful. A big hall in which people find difficulty in hearing an address from a central position, may be said to have poor acoustics. A well-constructed language laboratory is normally said to possess good acoustics. On the other hand a linguist, particularly an expert in general phonetics and the phonology of a particular language, finds articulatory phonetics – the realization of sounds of natural languages – very important. Equally, such an expert finds auditory phonetics – the perceptual aspect of sounds – very relevant to his interest.

In some respects, however, the three branches are interconnected. For instance, if we pay attention to realization (pronunciation) and perception (hearing) of the sounds [p] and [b], which are both ***bilabial plosives***, all the three branches would be seen to be relevant: articulatory phonetics would add the dimension of vibration of the vocal lips to bring about voicing in the case of [b] and the absence of vibration of the vocal lips in the case of [p].

Auditory phonetics would supply information that differentiates voiceless [p] from voiced [b]. In a third way, the differences would feature more prominently in an acoustic analysis of the same sounds where evidence of *voicelessness* would be available in the sound wave for [p] and evidence of voicing would be available in the sound wave for [b].

So, while the three branches of phonetics: articulatory, auditory and acoustic are separate (and separable) all the three are, as we have seen above, also united in their functions. The three branches also underlie the study of phonology.

## 2. ORGANS OF SPEECH

Organs of speech refer to all those part of the human body which are concerned in various ways of production of speech. Most of them are only secondary concerned with speech production; their primary functions are to do ***eating, chewing, swallowing food*** and ***respiration***. The organs of speech are the ***lungs, trachea, larynx, pharyngeal*** and ***oral cavity*** with their components and ***nasal passage*** constitute as a group what is termed as the ***vocal tract***. For functional descriptive purposes, the tract is normally divided into 2 parts, one above the ***larynx***, the other below it within the ***larynx*** itself are the ***vocal fold***; aperture between the fold is known as the ***glottis*** and the tract above the ***glottis*** is therefore called as ***supra-glottal vocal tract*** and that below it is the ***sub-glottal vocal tract***.

### a. ARTICULATORS

The articulators consist of the various component of the mouth. The articulators are divided into two types; ***active articulatory organs*** and ***passive articulatory organs.***

**i. Active Articulatory Organs:** are precisely those that are situated at the lower part of the mouth; such as $^{1}$***lower lip,*** $^{2}$***lower teeth,*** $^{3}$***tip of the tongue,*** $^{4}$***front of the tongue,*** $^{5}$***blade of the tongue*** and $^{6}$***back of the tongue***.

In addition, they are responsible for rising up to approach or to make contact with ***passive articulatory organs***.

**ii. Passive Articulatory Organs:** are situated at the upper part of the mouth such as $^{1}$***upper lip,*** $^{2}$***upper teeth,*** $^{3}$***alveolar,*** $^{4}$***hard palate,*** $^{5}$***soft palate*** etc. and they are mostly stationary in nature when you compare the degree of movement with the ***active articulatory organs***.

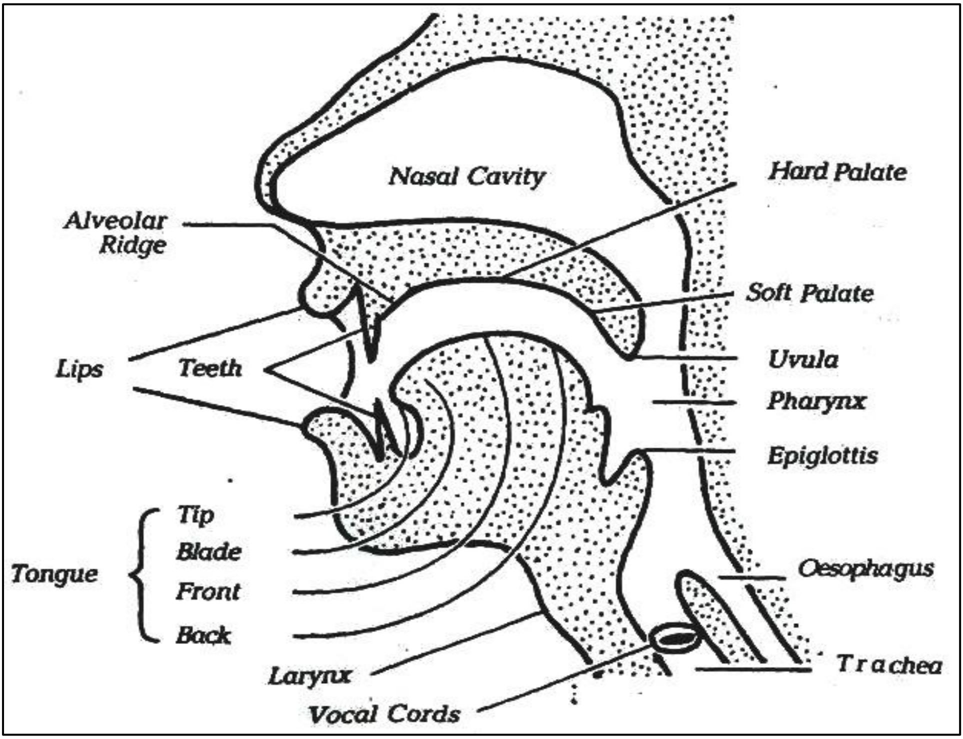


***Figure 1: Organs of speech***

**1. Pharynx:** is a tube which begins just above the ***larynx***, it is about **7cm long in women**, and about **8cm long in men**; and it is at the top end of the mouth. It is divided into two (2) parts; **one part in the back of the mouth** and other **been the beginning of the way through the *nasal cavity***.

**2. Velum (Soft Palate):** is seen in the diagram, in the position that allows air to pass through the nose and through the mouth. In speech it is raised so that air cannot escape through the nose. The other important thing about the ***velum*** is that, it is one of the articulators to touch by the ***back tongue***. When we make sound **/k/** and **/g/** the ***tongue*** is in contact with the ***lower side of the velum***, and we called these ***velar*** consonants.

**3. Hard Palate:** is often called the ***"the roof of the mouth"*** so you can feel its smooth curved surface with your tongue.

**4. Alveolar Ridge:** is between the top front teeth and the hard palate. You can feel it with your tongue. Its surface is really much rougher that is felt and is covered with little ridges. Sound made with the ***tongue*** such as **/t/** and **/d**/ are called ***alveolar***.

**5. The Tongue:** is occurred a very important articulation and it can be moved into many different place and different shapes. It has four (4) parts; ***tip, blade, front*** and ***back***.

**6. The Teeth (Upper & Lower):** are usually shown in the diagram only at the ***front of the mouth*** immediate behind the ***lips***. The ***tongue*** is in contact with the ***upper side teeth*** for many speech sounds. Sound made with ***tongue*** touching are called ***dental*** sound; are **/Ɵ/** and **/ð/.**

**7. Lips:** the lips are important in speech. They can be pressed together (when we produced the sounds of **/p/** and **/b/)** brought into contact with teeth as in **/f/** and /**v/** sound in which lips are in contact with each other are called ***bilabial***, while those which ***lips and teeth*** are called ***labio-dental***.

# 4. PHONEMES AND ALLOPHONES

## a. The Phoneme

Greek phōnēma "sound produced" < phōnein "produce a sound" Phone is a sound segment which is capable of changing meaning when replaced by another segment is said to be significant, contrastive or distinctive. A significant sound segment may be said to represent a phoneme.

If we consider the phonological rank scale which has the tone group, the foot, the syllable and the phoneme, we can say that the phoneme is the smallest meaningful unit within a phonological rank scale. Hyman (1975:59) defines the phoneme in a way similar to the above popular definition: **“a minimal unit of sound capable of distinguishing words of different meanings.”** Encarta Dictionary defined phonemes as **“a speech sound that distinguishes one word from another, e.g. the sounds "d" and "t" in the words "bid" and "bit." A phoneme is the smallest phonetic unit that can carry meaning.”**

Thus, the sounds /**r**/ and /**l**/ are phonemes realized in English and shown to be responsible for the difference in meaning between the English words ***read*** /ri:d/ and ***lead*** /li:d/. A traditional way of arriving at significant sounds in all natural languages (and hence **phonemes** in them), is through the construction of minimal pairs (**Gimson (1980: 49) describes this as “pairs of words which are different in respect of only one sound segment”.).** If we take two words which appear the same (morphologically) except in one respect, the different sound which causes a change in meaning is the phoneme. For instance:

(i) pen, ten /pen/, /ten/
(ii) right, fight /r it/, /f it/
(iii) sing, king /s /, /k /

The first sound in each group - /p, t, r, f, s, k/ is a phoneme.
In setting up minimal pairs, we should be careful to note that even though the initial sounds in each pair are important in signaling differences in meaning, the remaining sounds in each pair are also representative of phonemes because a change in any of them will bring about a change of meaning.

## b. The Allophone

A single phoneme can be realized (pronounced) in different ways depending on where the sound occurs in the word. For instance, the English sound /p/ may be aspirated word, and would be shown thus [ph]. The same sound **/p/** in the middle of a word will most likely be unaspirated [p] at the end of a word the same /p/ sound may be unreleased [ p ]. These three "***different***" /p/ sounds realized as [ph, p, $p^h$] are all allophones of the same phoneme /p/. If we take Jones' (1931:74) definition of the term phoneme as "**a family of sounds made up of an important sound and various realizations of that sound"** we can come to the conclusion that in the words *park*, *spark*, and wrap the phoneme /p/ is the important sound and [ph] and [p] and [$p^h$] are members of the family representing three different realization: word initially [ph], word medially [p] and word finally [ $p^h$].

Allophone describes how a number of "*subsidiary phonemes*" can be realised from the same "*main phoneme*" as a result of the environment that the "*main phoneme*" has occurred. What I have been referred to as the "*main phoneme*" remains as the *main phoneme*; but is capable of generating "*subsidiary phonemes*" if the circumstances of its use in spoken English constrain it to, when the generated forms are known as allophones.

## Description of Allophones

By breaking the word "allophones" into two, co-joined by -o-. Then, you have "*all*" –*o*- "*phones*". Let me add a '*y*' to the first of the two words. Then, you have, "*ally*" -o- "*phones*." From your dictionary meaning, you would probably have known that an *ally is someone who supports you and is very close to you, not in terms of distance, but in terms of understanding and similarity of interests*. With such an ally (often used for countries of common interests) you will always have one common denominator. While "*phones*" is the smallest speech sound unit, and "*phoneme*", the smallest speech sound unit of a language; examples of both are the vowel and consonant sounds: [æ ɒ t s]. Lastly, by adding an '*f*' to the co-joining 'o' to give you 'o***f***', this finally results to "***ally of phone***"; the "***ally of phone***" may have been said to have formed "***allophone***". Thus, *an **allophone is a phoneme that shares similarities of pronunciation with a common denominator – a phoneme***. More technically, ***allophones are phonemes, which share a variety of pronunciations with a common phoneme***. These varieties are determined by phonetic circumstances such as types of words, morphemes or positions. Ashby and Maidment (2005:189) define an allophone as "**A speech sound considered as a positional variant of a phoneme**". This means that allophones are variants of a phoneme. A phoneme changes into variants because of the position it occupies in a word or adjourning words, which calls for a slight difference in pronunciation. Such positions may be:

**(i)** If the sound occurs at the initial position and
**(ii)** If it occurs at the middle of a word
**(iii)** If it occurs at the end of a word; and
**(iv)** The type of sound (vowel or consonant) that bounds it at the right or left hand.

From the above, it be realized that, the allophones are variants of a phoneme realised according to the phonetic environments. They are mutually exclusive, occurring in complementary distribution. Example of the phoneme, /t/ and some of its variants (allophones).

This sound can get greatly influenced by different situations around it. This phoneme is what is regarded as the *phonetic representation* or *underlying representation* of the phoneme.

1. The alternative realizations are that /t/ becomes *aspirated* in the stressed syllable initial position. This allophonic realization of /t/ is written as $[t^h]$.
2. /t/ also gets *nasalised* when followed by a homorganic nasal. That is, when followed by /$^n$/, which is also an alveolar sound like **/t/,** sound **/t/** begins to anticipate the pronunciation of the following /$^n$/ sound and thus releases its air stream partly through the nose. We write it as $[t^N]$.

3. /t/ also becomes *lateralised* when followed by a homorganic lateral. That is, the alveolar lateral /l/ following /t/ in a word like bottle /b t$^{L}$l/ gets anticipated in the course of finishing the production of /t/ in the word above. Thus, /t/ gets finished in producing **/l/.**
4. We can thus see four possible realizations of /t/. It may be just the voiceless alveolar plosive as in bat or cat. It may be realized with *aspiration* as in '***tape'*** or *nasalised* as in '***cotton'*** or *lateralised* as in '***kettle'***. These four realizations occurred in different environments and they are therefore referred to as allophonic variants of the same phoneme.

We however note that they cannot be regarded as different phonemes because the sound underlying the representations can still occur in the same environment in a minimal pair. Thus, *tape – take, bat – bet*, etc.

/t$^{h}$/ aspirated as in *teach*
/t/ unaspirated as in *water*
t /t/ /t$^{n}$/ nasalize as in *tin*
/t$^{w}$/ labialised as in *twice*
/t$^{-}$/ unreleased as in *great*

It is clear from the above example that the phoneme we realise as /t/ has, among its variant realisations: /t$^{h}$, t, t$^{n}$, t$^{w}$ and t$^{-}$/. All these variants are called the allophones if /t/. Although they are allophones of the same phoneme, yet, they do not replace each other without sounding awkward. This is why they are said to be mutually exclusive, that is, there distributions are not completely similar in phonetic environments (Ashby and Maidment, 2005 :139).

## 5. SPEECH SOUND/PRODUCTION PROCESS

### a. Respiratory and Phonatory Stages

When air leaves the lungs (where it is normally stored), it moves through the *trachea* to the *larynx* which covers and encloses the *vocal lips* (*vocal bands, vocal cords* or *vocal folds*). At the centre of the *vocal lips*, there is space (the *glottis*). When this space is closed, the vocal lips are brought together through the action of the elastic membranes which stretch from the front to the back, across the larynx. This closure of the vocal lips naturally leads to a building up of air pressure below them. The air so built up forces itself through the *vocal lips* in *periodic puffs*. The *vocal lips* will then open under this pressure, first from the bottom and then upwards creating a kind of *rippling action*. The combined effects of the forced opening and closing results in a *vibration* of the *vocal lips*. A sound that comes with the vibration is normally voiced.

Voice may, therefore, be seen as a technical term that refers to phonation – a pre-articulatory output from the vibration of the vocal lips. All voiced sounds in all natural languages are produced when the vocal lips are in a closed position – a position that prepares the way for vibration.

But the vocal lips do not always remain in a closed position: sometimes they are partially open and at other times they may be fully open. When they are partially open, the air that passes through them results in whisper. When they are fully open, air passes through them without vibration and those results in the ensuing sounds being *voiceless*. Thus, the vocal lips help us to distinguish between *voiced* and *voiceless sounds* and when they assume a posture of intermediate opening, they help us to identify whisper. Perhaps more importantly, the vocal lips help us to distinguish between vowels and consonants: in the realization of vowels, in practically all natural languages, there is a vibration of the vocal lips. This follows the fact that all vowels in all natural languages are normally voiced. On the contrary, consonant sounds in all natural languages are either voiced or voiceless. These statements do not exclude the issue of devoicing which is possible in all cases.

## b. Articulatory Stages

From the vocal lips, the air passes through the pharynx. At this point, the brain carries out a quick, sharp action, directing the *soft palate* (also called the *velum*) particularly the uvula (the *pandulous* end of the *velum*), on what to do: the uvula will either be lowered to block the oral cavity or raised to the back wall of the throat to block the nasal cavity.

The blocking of the oral cavity takes place when nasal or nasalized sounds are to be.

## c. Sound Articulation: Specific Issues

First, we can refer to the organs of speech as the articulators. In that case the articulators may be seen as belonging to two groups – those which are relatively fixed and those which are relatively movable. The fixed articulators are generally said to be passive ones; the movable articulators are generally said to be active ones.

This is accurate from a physical/anatomical viewpoint: a fixed organ is inactive and hus passive from the standpoint of mobility; a movable organ is agile and thus active from the same standpoint of mobility. In phonetic terms however, a passive articulator is not necessarily fixed in the physical or traditional sense: it is simply the articulator that remains motionless, waiting (so to say), for the movable one to get to it for the purpose of a particular sound articulation. The active articulator on the other hand is phonetically the one that ensures or sparks off the articulation of a particular sound. Even though, the upper/lower lips are generally classified among the movable organs yet in the realization of sounds the upper lips are the passive articulators while the lower lips are the active articulators, for example in the realization of *labio-dental* sounds. Also, if in the articulation of a sound, the uvula is made to play rapidly against the back of the tongue, the uvula thus remains as the active articulator while the back of the tongue becomes the passive articulator. It is important to note that articulatory movements are largely upward movements (cf, Abercrombie, 1975:43), i.e. the active articulators which are largely located on the lower side of the vocal tract tend to move upward to meet the passive articulators which tend to be on the upper side of the vocal tract. So it is more accurate to say that while the great majority of the so called fixed organs of speech are passive articulators and the great majority of the so called active articulators are the movable organs, it is the specific role of a given organ at a given instance that determines passivity or activity.

## 6. DEFINITION OF PHONOLOGY

[1]Phonology is the scientific study of the sound system of a language. [2]It studies the interactions that occur among the sounds of a specific language. [3]It also involves the rules of interaction of the sound system of the language that make a combination of sounds meaningful and acceptable in the language. [4]The person who is concerned with this type of study is called a *phonologist*. His primary duty is to investigate how a set of sounds are structured before it makes meaning in the particular language.

[5]In phonology the smallest sound unit is the phoneme. These phonemes are used to undertake phonemic analysis. Because we must be carrying out this analysis of a specific language, we often enclose the transcription in slashed brackets - /…/, which is what is called the phonemic transcription.

## Relationship between Phonetics & Phonology

The relationship between phonetics and phonology is such that human speech is subject matter. However, Phonetics is the starting point while phonology takes off from where phonetics ends. The example of aspiration in English will illustrate this relationship. Through phonetic analysis, the consonant /p/ is a distinct speech sound in English in terms of the parameters of classification, place and manner of articulation. Through phonological analysis, /p/ is a distinct phoneme because it constitutes a difference in meaning when in combination with other sounds in a syllable. Also, /p/ is produced with a puff air when it occurs in word initial position and before a vowel as in people [pi:pl]. This production of /p/ is a variant called an *allomorph*. It is aspirated and represented as [ph]. The second /p/ in people does not meet the conditions of occurrence and so is not aspirated. Note however, that the aspirated [ph] is not a distinct sound nor is it a distinct phoneme of English. In other words, its occurrence does not constitute a difference in meaning.

## Interference between Phonetics & Phonology

Phonetics as a level of language study deals with the physical realization of sounds as produced by the organs of speech. It deals with the study and analysis of the speech sounds of languages in terms of articulation, transmission and perception. Thus, phonetics has three major components, which are acoustic phonetics (the physics or instrumental production of sounds), articulatory phonetics (production of sounds with the speech organs), and auditory phonetics (perception of sounds with the ears).

Details deriving from these branches (of phonetics) facilitate the development of writing systems, that is, orthographies. Without phonetics, it will be extremely difficult to study phonology as it produces the basic raw materials or building blocks for phonology to build on.

Human beings produce a whole lot of sounds ranging from the non-linguistics (belching, grunting, and hissing) to the linguistics (consonants and vowels). Out of all the sounds produced some of them are not linguistically relevant. So, phonetics deals with the production of the relevant and the irrelevant sounds in languages.

These sounds in phonetics do not belong to any particular language, they are universal sounds. Phonetics basically deals with all possible sounds by human beings, the useful and the useless sounds. Human beings can produce even the novelty sounds, which nobody had ever produced or heard.

These phonetic and non-phonetic segments which are universal sounds constitute the raw material for phonology to build on. Without some output from phonetics there will be no input for phonology. It is where phonetics leaves off that phonology starts.

It is enough to say that there would not have been any phonology if there was no Phonetics.

Phonology is a branch of linguistics that deals with useful sounds of a specific language. It studies the ways sounds of a language are organized into systems. At the phonetics level a wide range of sounds, which are not linguistics, are produced; only a very small number of these sounds are contrastive or significant. It is these significant speech sounds that phonology is concerned about.

Adetugbo (1992:103) says, **"phonology takes phonetic facts…but goes further to study speech sounds as constituting a system in any language"** Among the possible sounds capable of being produced by human beings, only a minute number of them can be combined to bring about meaningful utterances in a language. Atolagbe (2000:11) defines phonology as the sound system of a language, the speech sounds that are combined into meaningful and acceptable patterns for communication purposes, in a specific language.

Phonology is particular to a language. Several languages may share the same or similar sound segments, but structure these sounds differently to suit the system of that language for example English and Yoruba have the sound /p/. This sound is structured differently by each language based on phonological rule of that language (grammar is basically rule governed). Thus, we have Yoruba phonology, Igbo phonology, Hausa phonology and English phonology.

After phonetics has produced the useful and the useless sounds it stops its work. It is here that phonology comes in to pick and select the sounds and the non-sounds from the phonetic sound repertoire. Remember, we have said that '**Phonology is specific to a particular language'.** No two languages share the same rules in their organization of sounds. So, each language after selecting the sounds the sounds that are useful to it now leaves and structures these sounds and non-sounds to suit the rules of that language. It builds on the raw material produced at the phonetic level.

Interface between phonetics and phonology refers to the relationship between the two levels of language studies. There a very close relationship between Phonetics and Phonology. Phonetics is the minimum level in language in the hierarchy of language analysis. It is general in that no language can lay claims to it. It contains the useful and the useless sounds of languages. It is these useful and useless sounds of the language that constitute the raw materials in which Phonology needs to build on. Thus, Phonology is a branch of linguistics that deals with useful sounds of a specific language. It studies the ways sounds of a language are organized systems.

The relationship between Phonetic and Phonology is that in the hierarchy of language studies, Phonetics comes first and it followed by Phonology. Secondly, Phonetics produces the raw materials which phonology builds on. Without Phonetics there will be no phonology, phonology cannot be studied without phonetics.

## DIFFERENT BETWEEN PHONETICS & PHONOLOGY

| PHONOLOGY | PHONETICS |
|---|---|
| 1. Phonology is the study of sounds patterns and their meaning within and across languages | 1. Phonetics deals with physical production of the sounds. |
| 2. Phonology is about the patterns of sounds especially different patterns of sounds in different language or within each language | 2. Phonetics deals with the production of speech sounds by humans opened without prior knowledge of the language been spoken |
| 3. Phonology in broadly speaking the is the sub-discipline of linguistics concerned with the sounds of languages | 3. Phonetics is the branch of linguistics that comprises the study of sound of human speech. |

## 7. BASIC SOUND OF ENGLISH

One of the main ways the phonology of a language may be studied is through the examination of the segmental phonemes that are structured or put together as meaningful sound units through which the grammar of the language is projected. In this class we have two classes known as: ***consonants*** and ***vowels***.

In English language there are twenty four (24) consonants and twenty (20) vowels and diphthongs (12 monothongs and 8 dipthongs).

## 8. SOUND PATTERNS OF ENGLISH LANGUAGE

In speech making, certain speech organs are brought together at various places and manners. These organs come together to shape or moderate the sound signals produced from the larynx. Major among these organs are the lips, teeth, teeth ridge, tongue, pharynx, and even the nose, etc. All these are usually categorised into the pharyngeal, oral and nasal cavities, which form what is called the vocal tract. It is concerned with the study of the *consonant* and the *vowel* sounds involved in speech making in any language, concentrating on three main areas, namely: 1) place of articulation, 2) manner of articulation, and 3) quality of production.

## PLACE OF ARTICULATION

Place of articulation concerned with the identification and description of the organs of involved in the production of a specific sound and the particular place of mouth or vocal tract that is used in the production of a specific sound**,** simply refers to the point where the *active* and *passive articulatory* organs meet in order to produce sounds. The place includes *bilabial, dental, alveolar, post-alveolar, palato-alveolar* etc.

| **PLACE OF ARTICULATION** | **TECHNICAL NAME** |
|---|---|
| 1. The **two *lips*** | Bilabial; **/b/, /p/, /m/, /w/** |
| 2. The ***lower lips*** and ***upper teeth*** | Labiodental**; /f/, /v/** |
| 3. The ***tip*** of the ***tongue*** and ***upper teeth*** | Dental; **/Ɵ/, /ð/** |
| 4. The ***lip***, ***blade*** of the ***tongue*** and ***upper teeth ridged/alveolar ridge*** | Alveolar<br>**/t/, /d/, /s/, /z/, /n/, /l/, /r/** |
| 5. The ***tongue*** and the back part of the *teeth ridge* | Post-alveolar |
| 6. The ***blade of the tongue*** and ***teeth ridge*** plus ***palate*** | Palato-alveolar<br>**/t/, /dz/, //** |
| 7. The ***front of the tongue*** and ***hard palate*** | Palatal**;**<br>**/j/** |
| 8. The ***back of the tongue*** and ***soft palate*** | Velar;<br>**/k/, /g/, /ŋ/** |
| 9. The ***glottis*** and ***vocal cords*** | Glottal; **/h/** |
| 10. The ***back of the tongue*** and the ***uvula*** | **Uvula** |
| 11. The ***wall*** of the ***pharynx*** | **Pharynx** |

**a.** **Bilabial*:*** sound are produced by using *upper* and *lower* lips together, blocking the air and release it with a force. The air while produced the *bilabial plosive* **/p/, /b/** but there is not explosive, where air passive out through the nose for /**m**/ the lips open gently. Labial**s** are sound produce by one lip, examples: **/p/, /b/, /m/, /w/** etc.

**b.** **Labiodental:** these are produced with *upper lips* and *lower lips*. The air is passively blocked, but passing out some with some noisy and friction, they are also called *Labio-dental fricative*. They are /f/, /v/.

c. **Dental:** sounds produce by with rising of *tip* of the *tongue* between the *upper* and *the lower teeth*, they are partially block the air which blocked out with some noisy. They are called *dental fricative*. E.g.: **/Ɵ/, /ð/.**

d. **Alveolar:** the *tip* of the *tongue*, makes closure or partial closure with roof of the mouth or *alveolar ridge* for producing of the *alveolar* sounds. They are **/t/, /d/, /l/ /r/, /n/, /s/** and **/z/.** they are called *alveolar*. There is complete closure with **/t/** and **/d/** called *alveolar stopped/plosive*. There is also /n/ sound, called *alveolar nasal* produced by allowing the air to flow out through the nose. Another sound is **/l/** *alveolar lateral*, produces with the air passing out by the side of the tongue. Finally **/r/** produced with *tip* and *front* of the *tongue*.

e. **Palato-alveolar:** in the production of the *palate-alveolar* sounds, the *front* of the *tongue* is raised in the production towards *hard palate*, the *teeth* brought close together and air is produced, they are ʃ / and /ʒ/ called *palatoalveolar fricative*, and the other: / ʧ/ and / ʤ/ called *palatoalveolar affricative.*

f. **Palatal:** sound produced by raising the *front* part of the *tongue* to the point of the *hard palate* e.g**. /j/**

g. **Velar:** sounds produce by raising the *back of the tongue* to make contact with the *soft palate*. The air blocked then is exploded, they are called *velar plosive/stop;* /**k**/, /**g**/, other /**ŋ**/.

**h.** **Glottal:** during the production of the *glottal consonant*, the air passes out through an open *glottis* or *vocal codes* and passes out through an *open mouth:* /**h**/

## b. MANNER OF ARTICULATION

The manner of speech production concerns the various ways or *how* these articulators produce speech sounds. For the consonant sounds, it is possible to say that some sounds are produced with total closure of the articulators (*stops* or *plosives*), or friction (*Affricates/Fricatives*). Another sound might be produced by the vibration of the tip of the tongue, slightly touching the palate (*Rolled*) or just tapping it (*Tap-Flap*). It is also possible to shape the mouth such that a sound is allowed to pass through a space at both sides of the blade of the tongue and the mouth (*Lateral*), or allow the sound to come out of the vocal tract with little or no obstruction of the articulators (*Approximant* or *Semi Vowel*). Simply manner of articulation refers to how the sound is articulated during the production of a consonant sound. The flow of air from the lung is normally interpreted within the vocal cavity; the air blocked is usually carried out by the organs of speech. The blocked of the air by this organ may be total or partially, and the consonant can therefore classify as follows:

| MANNER OF ARTICULATION | TECHNICAL NAME |
|---|---|
| 1. Total closure suddenly release with exploitation | **Plosive/stopped**<br>**/b/, /p/, /t/, /d/, /k/, /g/** |

| | |
|---|---|
| 2. Total closure gradually release | Affricative<br>/ʧ/, /ʤ/ |
| 3. Partial closure gradually release with friction | **Fricative**<br>**/ʃ/, /ʒ/, /s/, /z/, /v/, /f/, /Ɵ/, /ð/, /h/** |
| 4. Total closure of the mouth, free escape of air through the nose | **Nasal**<br>**/m/, /n/, /ŋ/** |
| 5. Partial closure and gradually release by the sides of tongue | **Lateral**<br>**/l/, /r/** |
| 6. very weak closure, semi-vowel like escape of air | **Glide/approximant**<br>**/w/, /j/** |

## c. STATE OF GLOTTIS:

State of the glottis means the presence or absence of laryngeal vibrations while producing the sound. When there is vibration from the *vocal code*, the *consonant* produced is said to be ***voiced***. When there is no vibration, the *consonant* produced is ***voiceless***. When a *voiceless consonant* is produced with greater force or pressure (*fortis* or *tense*) than its voiced counterpart (e.g. [p] vs [b]. Inversely, a voiced sound like [b] might be produced with a weaker force (*lenis* or *lax*) than its voiceless counterpart [p].

| **PLACE OF ARTICULATION** | **MANNER OF ARTICULATION** | **STATE OF GLOTTIS** | |
|---|---|---|---|
| | | **Voiced** | **Voiceless** |
| Bilabial | Plosive | p | b |
| Alveolar | Plosive | t | d |
| Velar | Plosive | k | g |
| Post alveolar | Affricative | ʧ | ʤ |
| Bilabial | Approximant | - | w |
| Labiodental | Fricative | f | v |
| Dental | Fricative | Ɵ | ð |
| Alveolar | Fricative | s | z |

| | | | |
|---|---|---|---|
| Alveolar | Lateral | - | l |
| Alveolar | Approximant | - | r |
| Palatoalveolar | Fricative | ʃ | ʒ |
| Palatal | Approximant | - | j |
| Glottal | Fricative | h | - |
| Bilabial | Nasal | - | m |
| Alveolar | Nasal | - | n |
| Velar | Nasal | - | ŋ |

# FORMAL DESCRIPTION OF THE CONSONANTS SOUND OF ENGLISH

We can now illustrate the classification of *consonant* with table, showing *English Consonants* in relation with 3 parameters described above.

| **Sounds** | **Place of Articulation** | **Manner of Articulation** | **State of Glottis** | **Examples in Words** |
|---|---|---|---|---|
| **/p/** | *bilabial* | *plosive* | *voiceless* | pet |
| **/b/** | *bilabial* | *plosive* | *voiced* | bat |
| **/t/** | *alveolar* | *plosive* | *voiceless* | term |
| **/d/** | *alveolar* | *plosive* | *voiced* | dog |
| **/k/** | *velar* | *plosive* | *voiceless* | kettle |
| **/g/** | *velar* | *plosive* | *voiced* | goat |
| **/f/** | *labiodental* | *fricative* | *voiceless* | faith |
| **/v/** | *labiodental* | *fricative* | *voiced* | van |
| **/Ө/** | *dental* | *fricative* | *voiceless* | faith |
| **/ð/** | *dental* | *fricative* | *voiced* | these |
| **/s/** | *alveolar* | *fricative* | *voiceless* | sun |
| **/z/** | *alveolar* | *fricative* | *voiced* | zeal |
| / ʃ/ | *palatoalveolar* | *fricative* | *voiceless* | sharp |
| / ʒ/ | *palatoalveolar* | *fricative* | *voiced* | leisure |
| **/h/** | *glottal* | *fricative* | *voiceless* | hurt |
| /ʧ/ | *post alveolar* | *affricative* | *voiceless* | cheese |
| /ʤ/ | *post alveolar* | *affricative* | *voiced* | jungle |
| **/m/** | *Bilabial* | *nasal* | *voiced* | man |
| **/n/** | *alveolar* | *nasal* | *voiced* | nurse |
| **/ŋ/** | *vela* | *nasal* | *voiced* | sing |
| **/l/** | *alveolar* | *lateral* | *voiced* | loan |
| **/r/** | *alveolar* | *lateral* | *voiced* | radio |
| **/w/** | *bilabial* | *approximant* | *voiced* | wave |
| **/j/** | *palatal* | *approximant* | *voiced* | young |

## ENGLISH CONSONANT CHART

| MANNER OF ART. | Bilabial | | Labiodental | | Dental | | Alveolar | | Post alveolar | | Palatoalveola | | Palatal | | Velar | | Glottis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Plosive** | b | p | | | | | t | d | | | | | | | k | g | | |
| **Affricative** | | | | | | | | | | | tʃ | ʤ | | | | | | |
| **Fricative** | | | F | v | Ө | ð | s | z | | | ʃ | ʒ | | | | | h | |
| **Nasal** | m | | | | | | | n | | | | | | | | ŋ | | |
| **Lateral** | | | | | | | | l,r | | | | | | | | | | |
| **Approximant** | | w | | | | | | | | | | | | j | | | | |

***Note***: those of the left (L) are voiceless, while those on the right (R) are voiced sounds. * Since the consonants are produced of various obstructions along the air passage their description and classification are based on this feature of obstruction then account the *parameters* of the classification and description thus. We can now identify the specific place of obstruction (articulation along the air passage).

## B. THE PURE VOWELS OF ENGLISH:

The vowels sound are divided into two (2) types: (1). Monothongs (2). Diphthongs

**(A). Monothongs:** These are vowels sounds that are produced with free plosive of air without obstruction. The *Monothongs* said are sub-divided into 2, that is: **(i). Short vowels (ii). Long vowels**

**(i). Short vowels:** are 7, these are: /**I**/, /e/, /æ/, /ʌ/, /ɔ/, /ʊ/, /a/

**(ii). Long vowels**: are 5, these are: /**I:**/, /3:/, /a:/, /ɔ:/, /ʊ:/.

- **SHORT VOWELS**

**/I/** as in fish, bit, kit, pit, it, hit, him, hill

**/e/** as in hen, bell, when, yellow, ten, red, set

**/æ/** as in man, cat, bad, habit, bag, jacket, fat
**/Ʌ/** as in cut, hut, come, dull, jump, but, love, luck, blood
**/ɔ/** as in pot, hot, gone, sport, dog, drop
**/Ʊ/** as in book, foot, look, cook, full
**/a/** as about, teacher, wider, Saturday, arrest, apply

## ▪ LONG VOWELS

**/I:/** as in beat, eat, heat, seed, green, tree, seem, real, east
**/3:/** as in girl, bird, purse, first, shirt, search, work, earn
**/a:/** as in pass, card, car, far, arm, act, farm, heard, hard
**/ɔ:/** as in board, ball, horst, water, door, tall, floor, short
/Ʊ:/ as in food, loose, soon, rule, choose, fool

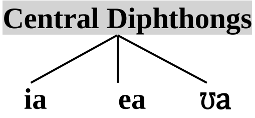
## DIPHTHONGS:

Diphthong is a sequence of two (2) vowels that looks as two but is pronounced as a one. Diphthongs are 8 in number.

**/ia/** as in ear, appear, clear, idea, near, beer, dear, fear
**/ea/ -** air, hair, wear, rear, stair, swear, millionaire, repair, beware
/Ʊa/ as in poor, sure, doer, pure, cure
**/ei/** as in snake, pay, pray, late, table, grey, wait, face
**/ai/** as in size, rice, buy, high, wife, right, style, five, ride, twice
**/ɔi/** as in boy, oil, joy, spoil, employ, coil, toy
**/ƏƱ/** as in go, know, slow, home, goal
**/aƱ/** as in now, cow, town, house, brown, doubt, loud

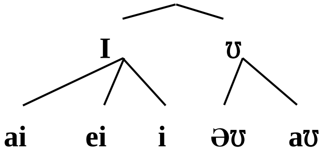
Diphthongs are divided into 2, 1). *Centering Dip* 2). *Closing Dip*.

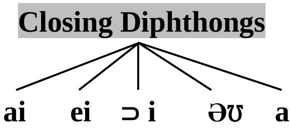
**(1). Centering Diphthong:** are those diphthong that start from vowel and end with a center vowel or back vowel.



**(2). Closing Diphthong:** are those diphthongs ending with high vowel as in /i/ and /ʊ/

## Closing Diphthongs

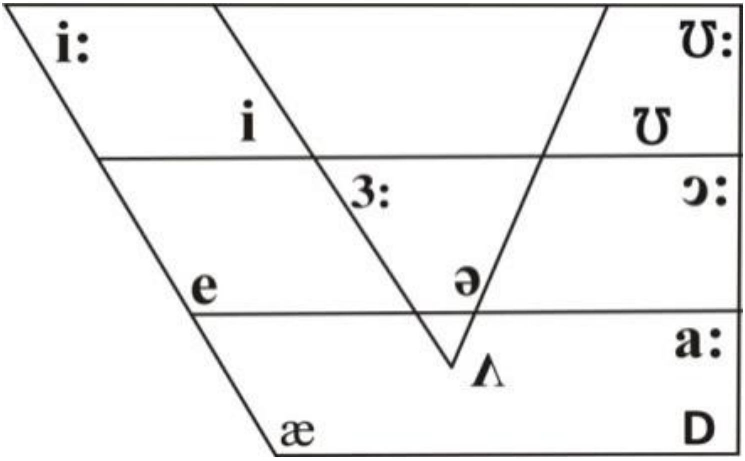




| POSITION OF THE TONGUE | | |
|---|---|---|
| **Front** | **Back** | **Central** |
| **I, I:** | **ʊ ʊ:** | 3: |
| **E** | a: ᴅ | ə |
| Æ | | Ʌ |

| LEVEL OF THE TONGUE | |
|---|---|
| **Levels** | **Sounds** |
| High | **I I: ʊ ʊ:** |
| Mid | **e 3 ə ⊃:** |
| Low | **Ʌ æ a: ᴅ** |

| LIP ROUNDING | |
|---|---|
| **Rounded** | **ʊ: ʊ ɔ: a ɔ** |
| **Unrounded** | **i: i e æ 3:** |
| **Neutral** | **ə Ʌ** |



| VOWELS | POSITION OF THE TONGS | LEVEL OF THE TONGUE | LIP ROUNDING |
|---|---|---|---|
| **/ɪ/** | *Front* | *High* | *Unrounded* |
| **/e/** | *Front* | *Mid* | *Unrounded* |
| **/æ/** | *Front* | *Low* | *Unrounded* |
| **/ʌ/** | *Central* | *Low* | *Neutral* |
| **/ɔ/** | *Back* | *Low* | *Rounded* |
| **/ʊ/** | *Back* | *High* | *Rounded* |
| **/ə/** | *Central* | *Low* | *Neutral* |
| **/ɪ:/** | *Front* | *High* | *Unrounded* |
| **/ɜ:/** | *Central* | *Mid* | *Unrounded* |
| **/a:/** | *Back* | *Low* | *Unrounded* |
| **/ɔ:/** | *Back* | *Mid* | *Rounded* |
| **/ʊ:/** | *Back* | *High* | *Rounded* |

## 9. TRANSCRIPTION

Transcription is techniques of writing domains as speech sound in a systematic and consistent way. Transcription systems are sets of rules which define how spoken language is to be represented in written symbols. Most phonetic transcription systems are based on the International Phonetic Alphabet (IPA).

## b. TYPES OF TRANSCRIPTION

There are two (2) types of transcription, these are: **(1). Phonetic [ ]**, and **(2). Phonemic / /**

## ii. PHONETIC TRANSCRIPTION

Narrow, Phonetics in impressionistic, it containing realization information and it termed allophonic. If the relevant includes any number of additional symbol to indicate the phonetic realization of the phoneme they allophone; The International Phonetic Association recommends that a phonetic transcription should be enclosed in square brackets "[ ]" implies more details. For examples: six [siks], cap [kæp], queen [kwi:n], cat [kæt], cup [kʰΛp], cry [kʰrai].

Phonetic transcription (also known as phonetic script or phonetic notation) is the visual representation of speech sounds (or phones). The most common type of phonetic transcription uses a phonetic alphabet, such as the International Phonetic Alphabet. Therefore, phonetic transcription can provide a function that the orthography cannot. It displays a one-to-one relationship between symbols and sounds, unlike traditional writing systems. Phonetic transcription allows one to step outside orthography, examine differences in pronunciation between dialects within a given language and identify changes in pronunciation that may take place over time.

The advantage of the narrow transcription is that it can help learners to get exactly the right sound, and allows linguists to make detailed analyses of language variation. The disadvantage is that a narrow transcription is rarely representative of all speakers of a language.

A further disadvantage in less technical contexts is that narrow transcription involves a larger number of symbols that may be unfamiliar to non-specialists.

Phonetic transcriptions try to capture the actual pronunciation of a word objectively, but phonemic transcriptions are model-dependent.

For phonetic transcriptions, there is flexibility in how closely sounds may be transcribed. A transcription that gives only a basic idea of the sounds of a language in the broadest terms is called a broad transcription; in some cases, it may be equivalent to a phonemic transcription (only without any theoretical claims). A close transcription, indicating precise details of the sounds, is called a narrow transcription. They are not binary choices but the ends of a continuum, with many possibilities in between. All are enclosed in brackets.

### i. PHONEMIC TRANSCRIPTION

Broad phonemic, a collected text represented in terms of phonemes, known as phonemic transcription or almost equivalent abroad transcription. The International Phonetic Association recommends that transcription that specifically denotes only phonological contrasts may be enclosed in slashes "/ /" implies less details. E.g. queen /**kwi**:**n**/, book **/bƱk/,** tough **/tΛf/,** seed /**si:d/,** sin **/si:n/**

The advantage of the broad transcription is that it usually allows statements to be made which apply across a more diverse language community.

However, phonemic transcriptions may also be broad or narrow, or perhaps it would be better to say *abstract* versus *concrete*. They may show a fair amount of phonetic detail, usually of a phoneme's most common allophone, but because they are *abstract symbols* they do not need to resemble any sound at all directly. Phonemic symbols will frequently be chosen to avoid diacritics as much as possible, under a 'one sound one symbol' policy.

## TRANSCRIBING

Latin *transcriptum* < past participle of *transcribere* (transcribe); transcribe to write speech sounds phonetically. Transcription is a phonetic representation of speech using special symbols.

| **Word** | **Transcription** |
|---|---|
| *seat* | **/si:t/** |
| *quay* | **/ki:/** |
| *king* | **/kiŋ/** |
| *sword* | **/so:d/** |
| *cut* | **/kʌt/** |
| *young* | **/jʌŋ/** |
| *shoe* | ʃ′ **u:/** |
| *church* | tʃ tʃ / |
| *famous* | **/feɪməs/** |
| *boys* | **/b⊃ɪz/** |
| *women* | **/wɪmɪn/** |
| *goat* | **/g⊃ʊt/** |
| *calm* | **/ka:m/** |
| *mother* | **/mʌðə/** |
| *first* | **/fɜ:st/** |

| **Word** | **Transcription** |
|---|---|
| *queen* | **/kwi:n/** |
| *book* | **/bƱk/** |
| *tough* | **/tɅf/,** |
| *seed* | **/si:d/** |
| *sin* | **/si:n/** |
| *cat* | **/kæt/** |
| *cup* | **/kɅp/** |
| *cry* | **/krai/** |
| *cap* | **/kæp/** |
| *six* | **/siks/** |
| *student* | **/stju:d3nt/** |
| *class* | **/kla:s/** |
| *university* | **/ju:nɪv3səti:/** |
| *phonetic* | **/fənɛtɪk/** |
|  |  |